इंटरनेट मानक

Disclosure to Promote the Right To Information

Whereas the Parliament of India has set out to provide a practical regime of right to information for citizens to secure access to information under the control of public authorities, in order to promote transparency and accountability in the working of every public authority, and whereas the attached publication of the Bureau of Indian Standards is of particular interest to the public, particularly disadvantaged communities and those engaged in the pursuit of education and knowledge, the attached public safety standard is made available to promote the timely dissemination of this information in an accurate manner to the public.

"जानने का अधिकार, जीने का अधिकार"
Mazdoor Kisan Shakti Sangathan
"The Right to Information, The Right to Live"

"पुराने को छोड नये के तरफ"
Jawaharlal Nehru
"Step Out From the Old to the New"

IS 3425 (1986): Method for determination of colour fastness of textile materials to acid felting : Severe [TXD 5: Chemical Methods of Test]

"ज्ञान से एक नये भारत का निर्माण"
Satyanarayan Gangaram Pitroda
"Invent a New India Using Knowledge"

Act Number 22 of 2005
The Indian Parliament
RIGHT TO INFORMATION

Made Available By
Public.Resource.Org

"ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है"
Bhartṛhari—Nītiśatakam
"Knowledge is such a treasure which cannot be stolen"

BLANK PAGE

BRUTUM FULMEN

IGNORANTIA JURIS NON EXCUSAT

PROTECTED BY COPYRIGHT

Indian Standard

METHOD FOR DETERMINATION OF COLOUR FASTNESS OF TEXTILE MATERIALS TO ACID FELTING : SEVERE

(First Revision)

First Reprint MAY 1990

UDC 677.016.473.4 : 535.684.36

© *Copyright* 1987

BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

Gr 2 *March* 1987

Indian Standard

METHOD FOR DETERMINATION OF COLOUR FASTNESS OF TEXTILE MATERIALS TO ACID FELTING : SEVERE

(First Revision)

Chemical Methods of Test Sectional Committee, TDC 5

Chairman	*Representing*
DR (KUMARI) M. D. BHAVSAR	The Silk & Art Silk Mills' Research Association, Bombay
Members	
SHRI JAMSHED D. ADRIANWALA	The Tata Mills Limited, Bombay
DR V. G. AGNIHOTRI	National Peroxide Ltd, Bombay
SHRI S. R. ANANTHAKRISHNA SETTY	Binny Limited, Madras
SHRI A. J. KADAVAN (*Alternate*)	
SHRI P. K. BASU	Directorate General of Supplies & Disposals (Inspection Wing), New Delhi
SHRI A. K. SAIGAL (*Alternate*)	
SHRI M. L. BEHRANI	Ministry of Defence (R & D)
SHRI K. KASTURIA (*Alternate*)	
SHRI C. BHATTACHARYA	Indian Petrochemicals Corporation Ltd, Vadodara
SHRI D. K. CHATTOPADHYAY (*Alternate*)	
DR D. K. DAS	National Test House, Calcutta
SHRI N. C. CHATTERJEE (*Alternate*)	
SHRI K. S. DESIKAN	Office of the Textile Commissioner, Bombay
SHRI PAUL LINGDOH (*Alternate*)	
DIRECTOR, WEAVERS' SERVICE CENTRE, BOMBAY	Development Commissioner for Handlooms, New Delhi
SHRI M. D. DIXIT	The Bombay Textile Research Association, Bombay
SHRI D. K. SINHA (*Alternate*)	
DR V. G. KHANDEPARKAR	Cotton Technological Research Laboratory, Bombay
SHRI P. K. KHERE	Central Excise & Customs (Ministry of Finance), New Delhi

(*Continued on page* 2)

© *Copyright* 1987

BUREAU OF INDIAN STANDARDS

This publication is protected under the *Indian Copyright Act* (XIV of 1957) and reproduction in whole or in part by any means except with written permission of the publisher shall be deemed to be an infringement of copyright under the said Act.

(*Continued from page* 1)

Members	*Representing*
DR B. R. MANJUNATHA	Intexa India, Bombay
SHRI SUNIL S. MEHTA	Silk & Art Silk Mills' Association, Bombay
DR A. K. MUKHERJEE	Indian Jute Industries' Research Association, Calcutta
SHRI H. B. NAGORIA	Man-Made Textile Research Association, Surat
SHRI S. R. DESAI (*Alternate*)	
DR (SHRIMATI) U. NANDURKAR	Wool Research Association, Bombay
DR S. N. PANDEY	Cotton Technological Research Laboratory (ICAR), Bombay
KUMARI I. G. BHATT (*Alternate*)	
DR (SHRIMATI) G. R. PHALGUMANI	Textiles Committee, Bombay
SHRI M. S. RATHODE	National Textile Corporation, New Delhi
SHRI P. P. CHECKER (*Alternate*)	
REPRESENTATIVE	Crescent Dyes & Chemicals Ltd, Calcutta
DR R. K. SAXENA	Ministry of Defence (DGI)
SHRI D. K. SRIVASTAVA (*Alternate*)	
SHRI J. J. SHAH	The Bombay Millowner' Association, Bombay
SHRI JAMNADAS K. SHAH	The Arvind Mills Limited, Ahmadabad
SHRI I. M. PATEL (*Alternate*)	
SHRI K. G. SHAH	Ahmedabad Manufacturing & Colico Printing Co Ltd, Ahmadabad
DR J. I. SETALWAD (*Alternate*)	
SHRI S. S. TRIVEDI	Ahmedabad Textile Industry's Research Association, Ahmadabad
SHRI J. N. VOHRA	Punjab State Hosiery & Knitwear Development Corporation Ltd, Chandigarh
SHRI P. T. BANERJEE (*Alternate*)	
SHRI R. I. MIDHA, Director (Tex)	Director General, ISI (*Ex-officio Member*)

Secretary

SHRI M. S. VERMA
Deputy Director (Tex), ISI

Colour Fastness Subcommittee, TDC 5 : 3

Convener	
SHRI S. S. TRIVEDI	Ahmedabad Textile Industry's Research Association, Ahmadabad
Members	
SHRI M. R. BHATT	The Atul Products Limited, Atul
SHRI K. B. SHAH (*Alternate*)	
DR D. K. DAS	National Test House, Calcutta
SHRI K. S. DESIKAN	Office of the Textile Commissioner, Bombay
SHRI PAUL LINGDOH (*Alternate*)	
SHRI V. R. KARMARKAR	Indian Dyestuffs Industries Ltd, Bombay
SHRI I. M. PATEL	Arvind Mills Ltd, Ahmadabad

(*Continued on page* 7)

Indian Standard

METHOD FOR DETERMINATION OF COLOUR FASTNESS OF TEXTILE MATERIALS TO ACID FELTING : SEVERE

(First Revision)

0. FOREWORD

0.1 This Indian Standard (First Revision) was adopted by the Indian Standards Institution on 15 October 1986, after the draft finalized by the Chemical Methods of Test Sectional Committee had been approved by the Textile Division Council.

0.2 This standard was first published in 1966 and has been revised to align it with ISO 105-E13-1978 'Textiles — Test for colour fastness to acid-felting : Severe', issued by the International Organization for Standardization (ISO). Changes have been made in the preparation of composite specimen and sampling. It differs from ISO standard in respect of sampling of textile material.

1. SCOPE

1.1 This standard prescribes a method for determination of colour fastness of textile materials of all kinds and in all forms to the action of acids as used under severe conditions in the acid felting process.

2. PRINCIPLE

2.1 A specimen of the textile in contact with adjacent fabrics is treated with solutions of acetic acid and/or sulphuric acid, rinsed and dried. The change in colour of the specimen and the staining of the adjacent fabrics is assessed with standard grey scales.

3. SAMPLING

3.1 Sample to determine conformity of a lot to a specification shall be selected so as to be representative of the lot.

3.2 Sample drawn in compliance with the material specification or as agreed to between the buyer and the seller to evaluate the colour fastness of the textile material in the lot to acid-felting : severe, shall be held to be representative of the lot.

4. APPARATUS

4.1 A suitable open container and a glass rod flattened at one end, or an appropriate mechanical device (*see* Note).

NOTE — Launderometer of American Association of Textile Chemists and Colourists or Washwheel sponsored by the Society of Dyers and Colourists, may be used. Other similar mechanical device may also be used for the tests provided the results obtained are identical to those obtained with apparatus described in **4.1**.

4.2 Two adjacent fabrics, each measuring 10 × 4 cm, one piece made of wool and the other also made of wool or of another fibre to be assessed for staining, as desired (*see* Appendix A).

4.3 Grey scales for assessing change in colour and staining (*see* IS : 768-1982* and IS : 769-1982†).

5. REAGENTS

5.1 Quality of Reagents — Unless specified otherwise, pure chemicals shall be employed in tests and distilled water (*see* IS : 1070-1977‡) shall be used where the use of water as reagent is intended.

NOTE — 'Pure chemicals' shall mean chemicals that do not contain impurities which affect the experimental results.

5.2 Sulphuric Acid Solution — containing 1 ml concentrated sulphuric acid (sp gr 1·84) per litre.

5.3 Acetic Acid Solution — containing 5 ml of acetic acid (300 g/l) per litre.

6. PREPARATION OF COMPOSITE SPECIMEN

6.1 If the textile to be tested is fabric, draw at least three test specimens 10 × 4 cm from the test sample (*see* **3.2**). Place a test specimen between the two adjacent fabrics (*see* **4.2**) and sew along all four sides to form a composite specimen. Similarly, treat other test specimen to form composite specimens.

---

*Method for evaluating change in colour (*first revision*).

†Method for evaluating staining (*first revision*).

‡Specification for water for general laboratory use (*second revision*).

6.2 If the textile to be tested is yarn, knit or weave the test sample (*see* **3.2**) into a fabric and treat as in **6.1**, or form a layer of parallel lengths of yarn between the two adjacent fabrics (*see* **4.2**), the amount of yarn taken being approximately equal to half the combined mass of the adjacent fabrics. Sew along all four sides to hold the yarn in place and to form a composite specimen. Prepare at least three such composite specimens.

6.3 If the textile to be tested is loose fibre, comb and compress, from the test sample, an amount approximately equal to half the combined mass of the adjacent fabrics (*see* **4.2**) into a sheet 10 × 4 cm. Place the sheet between the two adjacent fabrics and sew along all four sides to hold the fibres in place and to form a composite specimen. Prepare at least three such composite specimens.

7. PROCEDURE

7.1 Take the requisite amount of sulphuric and/or acetic acid solution (*see* Note 1) in a container to give a liquor to material ratio of 40 : 1. Raise the temperature of the solution to 90 ± 2°C. Immerse one composite specimen in the solution for 30 minutes at 90 ± 2°C.

NOTE 1 — The tests with sulphuric acid and acetic acid are carried out as separate tests or with only one of the two reagents (*see* **5.2** and **5.3**) as required.

NOTE 2 — The mechanical milling device set to give results, identical with those of hand milling, may be used.

NOTE 3 — During milling by hand, move the composite specimen continuously with the glass rod while it is in the milling bath and press it with the rod every two minutes, without removing from the bath.

7.2 Remove the specimen, rinse it for 10 minutes in cold running water and drain it. Remove the stitching along all sides except one of the shorter sides. Open out the composite specimen and dry it by hanging in air at a temperature not exceeding 60°C, with the three parts in contact only at the remaining line of stitching.

7.3 Evaluate the change in colour of the treated test specimen by the method prescribed in IS : 768-1982* and the degree of staining of the two adjacent fabrics by the method prescribed in IS : 769-1982†.

NOTE 1 — Treated test piece and the two adjacent fabrics should have cooled after drying and should have regained their normal moisture content before evaluation.

NOTE 2 — In cases of doubt in the colour fastness rating as assessed by an observer, the assessment may be made by three observers and the overall average rating may be reported accordingly.

---

*Method for evaluating change in colour (*first revision*).

†Method for evaluating staining (*first revision*).

7.4 Repeat the test with the remaining composite specimens.

8. REPORT

8.1 Report individually (a) the numerical rating for change in colour of the test specimen and (b) the numerical ratings for staining of the two adjacent fabrics used in the preparation of composite specimen.

APPENDIX A

(*Clause* 4.2)

CONSTRUCTIONAL DETAILS OF ADJACENT FABRICS

Sl No.	Adjacent Fabric	Mass in g/ m²	Type of Weave	Ends/cm	Picks/cm	Tax of Yarn	
						Warp	Weft
i)	Cotton	115 ± 5	1/1 Plain	35	31	16·5	14
ii)	Viscose	140 ± 5	1/1 Plain	28	22	20	33
iii)	Wool	125^{+5}_{-0}	1/1 Plain	21·0 ± 0·5	18·0 ± 0·5	15·6 × 2 Worsted	15·6 × 2 Worsted
iv)	Polyamide	130 ± 5	1/1 Plain	17·5	20	10 × 2	20
v)	Polyester	130 ± 5	1/1 Plain	23·5	20·5	7·5 × 2	20
vi)	Acrylic	135 ± 5	1/1 Plain	17·5	16	10 × 2	10 × 2

Note 1 — For wool adjacent fabric, additional requirements are:

a) *p*H value of aqueous extract = 6·5 to 7·5,

b) Residual fat content = 0·4 ± 0·1 percent, and

c) Alkali solubility = less than 18 percent.

Note 2 — For polyamide and acrylic adjacent fabrics, additional requirements are:

a) *p*H value of aqueous extract = 7 ± 0·5, and

b) Residual oil content = less than 1·0 percent.

Note 3 — For polyester adjacent fabric, additional requirement is : Residual oil content = less than 0·5 percent.

Note 4 — The adjacent fabrics shall be bleached and free from any sizing or finishing material and optical brightening agents.

(*Continued from page* 2)

Members	*Representing*
Dr (Shrimati) S. Patwardhan	Wool Research Association, Bombay
Dr (Shrimati) G. R. Phalgumani	Textiles Committee, Bombay
Shri S. R. Rajagopalan	Colour-Chem Limited, Bombay
Shri R. V. Gupte (*Alternate*)	
Representative	Crescent Dyes & Chemicals Limited, Calcutta
Shri K. S. Rindani	Sandoz (India) Limited, Bombay
Shri V. S. Angadi (*Alternate*)	
Shri S. R. A. Setty	Binny Ltd, Madras
Shri A. J. Kadavan (*Alternate*)	
Shri J. J. Shah	The Bombay Millowners' Association, Bombay
Shri S. A. Shah	The Silk & Art Silk Mills' Research Association, Bombay
Shri S. B. Iyer (*Alternate*)	
Shri A. K. Singh	Ministry of Defence (R & D)
Shri A. C. Perti (*Alternate*)	
Shri A. Somasundaram	Arun Knitters, Tirupur
Shri D. R. Tendulkar	Amar Dye-Chem Ltd, Bombay
Shri U. C. Tripathi	Swadeshi Polytex Limited, Ghaziabad
Shri S. Varadarajan	The Bombay Textile Research Association, Bombay
Shri D. R. Yadav	Ministry of Defence (DGI)
Shri U. K. Misra (*Alternate*)	

BUREAU OF INDIAN STANDARDS

Headquarters:

Manak Bhavan, 9 Bahadur Shah Zafar Marg, NEW DELHI 110002

Telephones: 331 01 31, 331 13 75 Telegrams: Manaksanstha (Common to all Offices)

Regional Offices:		*Telephone*
Central	: Manak Bhavan, 9 Bahadur Shah Zafar Marg, NEW DELHI 110002	331 01 31 331 13 75
*Eastern	: 1/14 C. I. T. Scheme VII M, V. I. P. Road, Maniktola, CALCUTTA 700054	36 24 99
Northern	: SCO 445-446, Sector 35-C, CHANDIGARH 160036	2 18 43 3 16 41
Southern	: C. I. T. Campus, MADRAS 600113	41 24 42 41 25 19 41 29 16
†Western	: Manakalaya, E9 MIDC, Marol, Andheri (East), BOMBAY 400093	6 32 92 95

Branch Offices:	
'Pushpak', Nurmohamed Shaikh Marg, Khanpur, AHMADABAD 380001	2 63 48 2 63 49
‡Peenya Industrial Area 1st Stage, Bangalore Tumkur Road BANGALORE 560058	38 49 55 38 49 56
Gangotri Complex, 5th Floor, Bhadbhada Road, T. T. Nagar, BHOPAL 462003	6 67 16
Plot No. 82/83, Lewis Road, BHUBANESHWAR 751002	5 36 27
53/5, Ward No. 29, R.G. Barua Road, 5th Byelane, GUWAHATI 781003	3 31 77
5-8-56C L. N. Gupta Marg (Nampally Station Road), HYDERABAD 500001	23 10 83
R14 Yudhister Marg, C Scheme, JAIPUR 302005	6 34 71 6 98 32
117/418 B Sarvodaya Nagar, KANPUR 208005	21 68 76 21 82 92
Patliputra Industrial Estate, PATNA 800013	6 23 05
T.C. No. 14/1421, University P.O., Palayam TRIVANDRUM 695035	6 21 04 6 21 17

Inspection Offices (With Sale Point):	
Pushpanjali, First Floor, 205-A West High Court Road, Shankar Nagar Square, NAGPUR 440010	2 51 71
Institution of Engineers (India) Building, 1332 Shivaji Nagar, PUNE 411005	5 24 35

---

*Sales Office in Calcutta is at 5 Chowringhee Approach, P. O. Princep Street, Calcutta 700072 27 68 00

†Sales Office in Bombay is at Novelty Chambers, Grant Road, Bombay 400007 89 65 28

‡Sales Office in Bangalore is at Unity Building, Narasimharaja Square, Bangalore 560002 22 36 71

Reprography Unit, BIS, New Delhi, India

AMENDMENT NO. 1 OCTOBER 2003
TO
IS 3425 : 1986 METHOD FOR DETERMINATION OF COLOUR FASTNESS OF TEXTILE MATERIALS TO ACID FELTING : SEVERE

(First Revision)

(*Page* 3, *clause* **2.1**, *line* 1) — Substitute 'adjacent fabric(s)' *for* 'adjacent fabrics'.

(*Page* 4, *clause* **4.2**) — Substitute the following for the existing:

'**4.2** Two single fibre adjacent fabrics, each measuring 10 cm × 4 cm, one piece made of wool and other also made of wool or of another fibre to be assessed for staining, as desired (*see* Appendix A).'

(*Page* 4, *clause* **4.3**) — Insert the following clause **4.4** after **4.3**:

'**4.4 Multifibre Adjacent Fabric** — measuring 10 cm × 4 cm'.

(*Page* 4, *clause* **6.1**, *line* 3) — Insert the words 'single fibre and' before 'adjacent fabrics'.

(*Page* 4, *clause* **6.1**) — Insert '(*see* Notes after **6.3**)' at the end of the clause.

(*Page* 5, *clause* **6.2**, *lines* 3 *and* 4) — Insert the words 'single fibre and' before 'adjacent fabrics'.

(*Page* 5, *clause* **6.2**) — Insert the words '(*see* Notes after **6.3**)' at the end of clause.

(*Page* 5, *clause* **6.3**, *lines* 3 *and* 4) — Insert the words 'single fibre and' before 'adjacent fabrics'.

(*Page* 5, *clause* **6.3**) — Insert the following Notes at the end:

'NOTES

1 Multifibre adjacent fabric may also be used in place of single fibre adjacent fabrics in which case the adjacent fabric shall cover only the face side of the test specimen (see also IS 10251:1982 General principles of testing textiles for colour fastness).

2 If the specimen is fabric, it is placed with its face in contact with the multifibre fabric and sewen along one short side.

3 If the specimen is yarn or loose fibres and amount approximately equal to mass of the multifibre adjacent fabric is evenely spread over the multifibre adjacent fabric, yarn being laid at right angles to the individual stripe. This is then covered with an equal size piece of light weight, non-staining quality of polypropylene fabric, stitched along all four sides and in addition between each pair of adjacent stripes comprising the multifibre adjacent fabric.'

(*Page* 5, *clause* **7.3**, *lines* 2 *and* 3) — Substitute 'adjacent fabric(s)' *for* 'two adjacent fabrics'.

(*Page* 5, *clause* **7.3**) — Insert the following at the end of clause:

'In case multifibre adjacent fabrics are used, staining on each type of fibre in multifibre adjacent fabric shall be assessed.'

(*Page* 5, *Note* 1 *below clause* **7.3**, *line* 1) — Substitute 'adjacent fabric(s)' *for* 'two adjacent fabrics'.

[*Page* 6, *clause* **8.1**(b)] — Substitute the following for the existing:

'b) the numerical ratings for staining of two single fibre adjacent fabrics used in preparation of composite specimens and if multifibre adjacent fabrics are used then numerical rating of staining on each type of fibre in multifibre adjacent fabric.'

(TX 05)

Reprography Unit, BIS, New Delhi, India